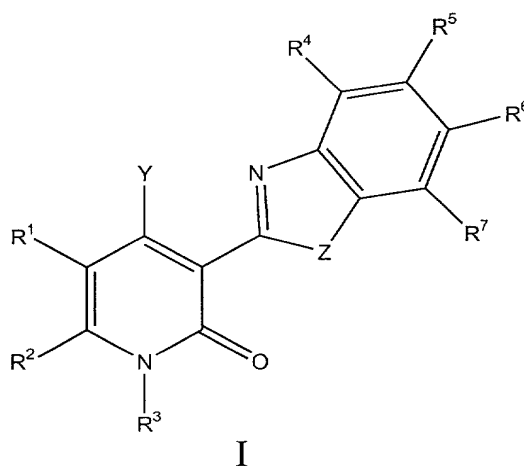


## CLAIMS

What is claimed is:

- 1                    1.        A compound having the structure I, a tautomer of the  
2        compound, a pharmaceutically acceptable salt of the compound, or a  
3        pharmaceutically acceptable salt of the tautomer



4                    I

5                    wherein,

- 6                    Y is selected from the group consisting of -OH, -OR<sup>8</sup> groups, -SH,  
7                    -SR<sup>9</sup> groups, -NR<sup>10</sup>R<sup>11</sup> groups, -CN, -C(=O)-R<sup>12</sup> groups, substituted  
8                    and unsubstituted alkyl groups, substituted and unsubstituted alkenyl  
9                    groups, substituted and unsubstituted alkynyl groups, substituted and  
10                    unsubstituted aralkyl groups, substituted and unsubstituted  
11                    heterocyclalkyl groups, substituted and unsubstituted  
12                    alkylaminoalkyl groups, substituted and unsubstituted  
13                    dialkylaminoalkyl groups, substituted and unsubstituted  
14                    arylaminoalkyl groups, substituted and unsubstituted  
15                    diarylaminoalkyl groups, substituted and unsubstituted  
16                    (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted

17 heterocyclylaminoalkyl groups, substituted and unsubstituted  
18 diheterocyclylaminoalkyl groups, substituted and unsubstituted  
19 (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted  
20 (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted  
21 heterocyclyl groups, substituted and unsubstituted aryl groups,  
22 substituted and unsubstituted hydroxyalkyl groups, substituted and  
23 unsubstituted alkoxyalkyl groups, substituted and unsubstituted  
24 aryloxyalkyl groups, and substituted and unsubstituted  
25 heterocyclcyloxyalkyl groups;

26 Z is selected from the group consisting of O, S, and  $\text{NR}^{13}$  groups;

27  $\text{R}^1$  and  $\text{R}^2$  join to form a 5 to 7 membered substituted or unsubstituted  
28 ring comprising at least one O, N, or S atom;

29  $\text{R}^3$  and  $\text{R}^{13}$  may be the same or different and are selected from the  
30 group consisting of H, -OH, substituted and unsubstituted alkoxy  
31 groups, substituted and unsubstituted aryloxy groups, - $\text{NH}_2$ ,  
32 substituted and unsubstituted alkylamino groups, substituted and  
33 unsubstituted arylamino groups, substituted and unsubstituted  
34 dialkylamino groups, substituted and unsubstituted diarylamino  
35 groups, substituted and unsubstituted (alkyl)(aryl)amino groups,  
36 substituted and unsubstituted heterocyclylamino groups, substituted  
37 and unsubstituted diheterocyclylamino groups, substituted and  
38 unsubstituted (alkyl)(heterocyclyl)amino groups, substituted and  
39 unsubstituted (aryl)(heterocyclyl)amino groups, substituted and  
40 unsubstituted heterocyclcyloxy groups, substituted and unsubstituted  
41 alkyl groups, substituted and unsubstituted aryl groups, - $\text{C}(=\text{O})\text{H}$ ,  
42 - $\text{C}(=\text{O})$ -alkyl groups, and - $\text{C}(=\text{O})$ -aryl groups;

R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, and R<sup>7</sup> may be the same or different and are independently selected from the group consisting of H, Cl, Br, F, I, -NO<sub>2</sub>, -CN, -OH, -OR<sup>14</sup> groups, -NR<sup>15</sup>R<sup>16</sup> groups, -C(=O)R<sup>17</sup> groups, -SH, -SR<sup>18</sup> groups, -S(=O)R<sup>19</sup> groups, S(=O)<sub>2</sub>R<sup>20</sup> groups, substituted and unsubstituted amidinyl groups, substituted and unsubstituted guanidinyl groups, substituted and unsubstituted primary, secondary, and tertiary alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted alkenyl groups, substituted and unsubstituted alkynyl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted heterocyclylaminoalkyl groups, substituted and unsubstituted diheterocyclylaminoalkyl groups, substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and unsubstituted hydroxyalkyl groups, substituted and unsubstituted alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl groups, and substituted and unsubstituted heterocycloxyalkyl groups;

R<sup>8</sup> is selected from the group consisting of substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, substituted and unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl

groups, -C(=O)NH<sub>2</sub>, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups, -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups, -C(=O)N(alkyl)(aryl) groups, -NH<sub>2</sub>, -NH(alkyl) groups, -NH(aryl) groups, -N(alkyl)<sub>2</sub> groups, -N(alkyl)(aryl) groups, -N(aryl)<sub>2</sub> groups, -C(=O)NH(heterocyclyl) groups, -C(=O)N(heterocyclyl)<sub>2</sub> groups, -C(=O)N(alkyl)(heterocyclyl) groups, and -C(=O)N(aryl)(heterocyclyl) groups;

R<sup>9</sup> and R<sup>18</sup> may be the same or different and are independently selected from the group consisting of substituted and unsubstituted alkyl groups, and substituted and unsubstituted aryl groups;

R<sup>10</sup> is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, and substituted and unsubstituted heterocyclyl groups;

R<sup>11</sup> is selected from the group consisting of H, substituted and unsubstituted alkyl groups, substituted and unsubstituted aryl groups, substituted and unsubstituted heterocyclyl groups, -OH, alkoxy groups, aryloxy groups, -NH<sub>2</sub>, substituted and unsubstituted heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl groups, substituted and unsubstituted alkylaminoalkyl groups, substituted and unsubstituted dialkylaminoalkyl groups, substituted and unsubstituted arylaminoalkyl groups, substituted and unsubstituted diarylaminoalkyl groups, substituted and unsubstituted (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted alkylamino groups, substituted and unsubstituted arylamino groups, substituted and unsubstituted dialkylamino groups, substituted and unsubstituted diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino groups, -C(=O)H, -C(=O)-alkyl groups,

- 99 -C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl groups,  
100 -C(=O)NH<sub>2</sub>, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,  
101 -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups,  
102 -C(=O)N(alkyl)(aryl) groups, -C(=O)-heterocyclyl groups,  
103 -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups,  
104 -C(=O)-N(heterocyclyl)<sub>2</sub> groups, -C(=O)-N(alkyl)(heterocyclyl)  
105 groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and  
106 unsubstituted heterocyclylaminoalkyl groups, substituted and  
107 unsubstituted diheterocyclylaminoalkyl groups, substituted and  
108 unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups, substituted and  
109 unsubstituted (aryl)(heterocyclyl)aminoalkyl groups, substituted and  
110 unsubstituted hydroxyalkyl groups, substituted and unsubstituted  
111 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl  
112 groups, and substituted and unsubstituted heterocycliloxyalkyl  
113 groups;
- 114 R<sup>12</sup> is selected from the group consisting of H, -OH, alkoxy groups,  
115 aryloxy groups, -NH<sub>2</sub>, -NH(alkyl) groups, -NH(aryl) groups,  
116 -N(alkyl)<sub>2</sub> groups, -N(aryl)<sub>2</sub> groups, -N(alkyl)(aryl) groups,  
117 substituted and unsubstituted alkyl groups, substituted and  
118 unsubstituted aryl groups, -NH(heterocyclyl) groups,  
119 -N(heterocyclyl)<sub>2</sub> groups, -N(alkyl)(heterocyclyl) groups, and  
120 -N(aryl)(heterocyclyl) groups;
- 121 R<sup>14</sup> is selected from the group consisting of substituted and  
122 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
123 substituted and unsubstituted heterocyclyl groups, substituted and  
124 unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl  
125 groups, -C(=O)-aryl groups, -C(=O)-heterocyclyl groups,  
126 -C(=O)NH<sub>2</sub>, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,

- 127 -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups,  
128 -C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups,  
129 -C(=O)N-(heterocyclyl)<sub>2</sub> groups, -C(=O)N(alkyl)(heterocyclyl)  
130 groups, -C(=O)N(aryl)(heterocyclyl) groups, substituted and  
131 unsubstituted aminoalkyl groups, substituted and unsubstituted  
132 alkylaminoalkyl groups, substituted and unsubstituted  
133 dialkylaminoalkyl groups, substituted and unsubstituted  
134 arylaminoalkyl groups, substituted and unsubstituted  
135 diarylaminoalkyl groups, substituted and unsubstituted  
136 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted  
137 heterocyclylaminoalkyl groups, substituted and unsubstituted  
138 diheterocyclylaminoalkyl groups, substituted and unsubstituted  
139 (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted  
140 (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted  
141 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl  
142 groups, substituted and unsubstituted hydroxyalkyl groups, and  
143 substituted and unsubstituted heterocycloxyalkyl groups;
- 144 R<sup>15</sup> is selected from the group consisting of H, substituted and  
145 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
146 and substituted and unsubstituted heterocyclyl groups;
- 147 R<sup>16</sup> is selected from the group consisting of H, substituted and  
148 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
149 substituted and unsubstituted heterocyclyl groups, -C(=O)H,  
150 -C(=O)-alkyl groups, -C(=O)-aryl groups, -C(=O)NH<sub>2</sub>,  
151 -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,  
152 -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups,  
153 -C(=O)N(alkyl)(aryl) groups, -C(=O)O-alkyl groups,  
154 -C(=O)O-aryl groups, substituted and unsubstituted aminoalkyl

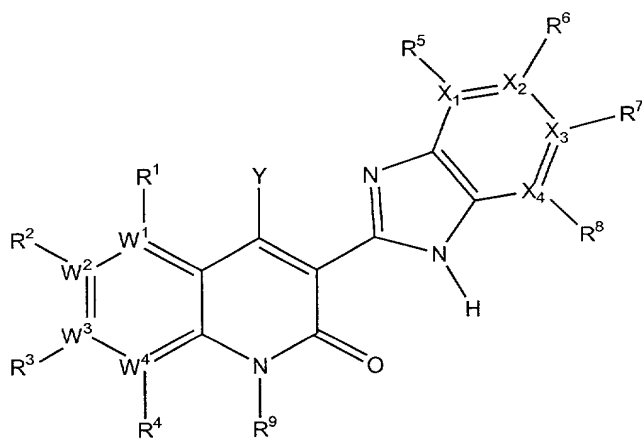
155 groups, substituted and unsubstituted alkylaminoalkyl groups,  
156 substituted and unsubstituted dialkylaminoalkyl groups, substituted  
157 and unsubstituted arylaminoalkyl groups, substituted and  
158 unsubstituted diarylaminoalkyl groups, substituted and unsubstituted  
159 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted  
160 heterocyclylalkyl groups, -C(=O)-heterocyclyl groups,  
161 -C(=O)-O-heterocyclyl groups, -C(=O)NH(heterocyclyl) groups,  
162 -C(=O)-N(heterocyclyl)<sub>2</sub> groups, -C(=O)-N(alkyl)(heterocyclyl)  
163 groups, -C(=O)-N(aryl)(heterocyclyl) groups, substituted and  
164 unsubstituted heterocyclylaminoalkyl groups, substituted and  
165 unsubstituted diheterocyclylaminoalkyl groups, substituted and  
166 unsubstituted (heterocyclyl)(alkyl)aminoalkyl groups, substituted and  
167 unsubstituted (heterocyclyl)(aryl)aminoalkyl groups, substituted and  
168 unsubstituted hydroxyalkyl groups, substituted and unsubstituted  
169 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl  
170 groups, and substituted and unsubstituted heterocyclyloxyalkyl  
171 groups; and

172 R<sup>17</sup>, R<sup>19</sup>, and R<sup>20</sup> may be the same or different and are independently  
173 selected from the group consisting of H, -NH<sub>2</sub>, -NH(alkyl) groups,  
174 -NH(aryl) groups, -N(alkyl)<sub>2</sub> groups, -N(aryl)<sub>2</sub> groups,  
175 -N(alkyl)(aryl) groups, -NH(heterocyclyl) groups,  
176 -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,  
177 -N(heterocyclyl)<sub>2</sub> groups, substituted and unsubstituted alkyl groups,  
178 substituted and unsubstituted aryl groups, -OH, substituted and  
179 unsubstituted alkoxy groups, substituted and unsubstituted  
180 heterocyclyl groups, substituted and unsubstituted aryloxy groups,  
181 heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH  
182 groups, -N(alkyl)O-alkyl groups, -N(aryl)O-alkyl groups,  
183 -N(alkyl)O-aryl groups, and -N(aryl)O-aryl groups.

- 1                    2.     The compound according to claim 1, wherein Y is selected  
2     from the group consisting of -OH, -OR<sup>8</sup> groups, and -NR<sup>10</sup>R<sup>11</sup> groups.
- 1                    3.     The compound according to claim 1, wherein Y is a -NR<sup>10</sup>R<sup>11</sup>  
2     group.
- 1                    4.     The compound according to claim 1, wherein Z is an NR<sup>13</sup>  
2     group.
- 1                    5.     The compound according claim 1, wherein R<sup>4</sup> and R<sup>7</sup> are  
2     hydrogen and R<sup>5</sup> and R<sup>6</sup> are selected from the group consisting of hydrogen and  
3     alkyl groups having from 1 to 4 carbon atoms.
- 1                    6.     The compound according to claim 1, wherein R<sup>5</sup> or R<sup>6</sup> is an  
2     -OR<sup>14</sup> group and R<sup>14</sup> is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.
- 1                    7.     The compound according to claim 1, wherein R<sup>5</sup> or R<sup>6</sup> is a  
2     -OCH<sub>2</sub>(CH<sub>2</sub>)<sub>q</sub>(heterocyclyl) group and q is 0, 1, 2, 3, or 4.
- 1                    8.     The compound according to claim 1, wherein R<sup>17</sup> is selected  
2     from the group consisting of substituted and unsubstituted alkyl groups, substituted  
3     and unsubstituted aryl groups, -NH<sub>2</sub>, -NH(alkyl) groups, -N(alkyl)<sub>2</sub> groups,  
4     -NH(aryl) groups, -N(aryl)<sub>2</sub> groups, -N(alkyl)(aryl) groups, -NH(heterocyclyl)  
5     groups, -N(heterocyclyl)(alkyl) groups, -N(heterocyclyl)(aryl) groups,  
6     -N(heterocyclyl)<sub>2</sub> groups, and N-containing heterocycles, wherein the N-containing  
7     heterocycles are bonded to the carbonyl carbon of the -C(=O)-R<sup>17</sup> group through  
8     either a nitrogen atom or a carbon atom in the rings of the N-containing  
9     heterocycles.



- 1                    9.      A compound having the structure III, a tautomer of the  
2      compound, a pharmaceutically acceptable salt of the compound, or a  
3      pharmaceutically acceptable salt of the tautomer



III

4

5

wherein,

6

$W^1$ ,  $W^2$ ,  $W^3$ , and  $W^4$  are selected from C or N, and at least one of  
7  $W^1$ ,  $W^2$ ,  $W^3$ , or  $W^4$  is N;

7

8

$X^1$ ,  $X^2$ ,  $X^3$ , and  $X^4$  are selected from C or N, and at least one of  $X^1$ ,  
9  $X^2$ ,  $X^3$ , or  $X^4$  is N;

9

10                    Y is selected from the group consisting of H, -OH, -OR<sup>10</sup> groups,  
11 -SH, -SR<sup>11</sup> groups, -NR<sup>12</sup>R<sup>13</sup> groups, -CN, -C(=O)-R<sup>14</sup> groups,  
12 substituted and unsubstituted alkyl groups, substituted and  
13 unsubstituted alkenyl groups, substituted and unsubstituted alkynyl  
14 groups, substituted and unsubstituted aralkyl groups, substituted and  
15 unsubstituted heterocyclalkyl groups, substituted and unsubstituted  
16 alkylaminoalkyl groups, substituted and unsubstituted  
17 dialkylaminoalkyl groups, substituted and unsubstituted  
18 arylaminoalkyl groups, substituted and unsubstituted

diarylaminomethyl groups, substituted and unsubstituted  
(alkyl)(aryl)aminomethyl groups, substituted and unsubstituted  
heterocyclylaminoalkyl groups, substituted and unsubstituted  
diheterocyclylaminoalkyl groups, substituted and unsubstituted  
(heterocyclyl)(alkyl)aminomethyl groups, substituted and unsubstituted  
(heterocyclyl)(aryl)aminomethyl groups, substituted and unsubstituted  
heterocyclyl groups, substituted and unsubstituted aryl groups,  
substituted and unsubstituted hydroxyalkyl groups, substituted and  
unsubstituted alkoxyalkyl groups, substituted and unsubstituted  
aryloxyalkyl groups, and substituted and unsubstituted  
heterocyclyloxyalkyl groups;

$R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ , and  $R^8$  may be the same or different and  
are independently selected from the group consisting of H, Cl, Br, F,  
I,  $-\text{NO}_2$ ,  $-\text{CN}$ ,  $-\text{OH}$ ,  $-\text{OR}^{15}$  groups,  $-\text{NR}^{16}\text{R}^{17}$  groups,  $-\text{C}(=\text{O})\text{R}^{18}$   
groups,  $-\text{SH}$ ,  $-\text{SR}^{19}$  groups,  $-\text{S}(=\text{O})\text{R}^{20}$  groups,  $\text{S}(=\text{O})_2\text{R}^{21}$  groups,  
substituted and unsubstituted amidinyl groups, substituted and  
unsubstituted guanidinyl groups, substituted and unsubstituted  
primary, secondary, and tertiary alkyl groups, substituted and  
unsubstituted aryl groups, substituted and unsubstituted alkenyl  
groups, substituted and unsubstituted alkynyl groups, substituted and  
unsubstituted heterocyclyl groups, substituted and unsubstituted  
alkylaminomethyl groups, substituted and unsubstituted  
dialkylaminomethyl groups, substituted and unsubstituted  
arylaminoalkyl groups, substituted and unsubstituted  
diarylaminomethyl groups, substituted and unsubstituted  
(alkyl)(aryl)aminomethyl groups, substituted and unsubstituted  
heterocyclylalkyl groups, substituted and unsubstituted aminoalkyl  
groups, substituted and unsubstituted heterocyclylaminoalkyl groups,  
substituted and unsubstituted diheterocyclylaminoalkyl groups,

48 substituted and unsubstituted (alkyl)(heterocyclyl)aminoalkyl groups,  
49 substituted and unsubstituted (aryl)(heterocyclyl)aminoalkyl groups,  
50 substituted and unsubstituted hydroxyalkyl groups, substituted and  
51 unsubstituted alkoxyalkyl groups, substituted and unsubstituted  
52 aryloxyalkyl groups, and substituted and unsubstituted  
53 heterocyclyloxyalkyl groups, and  $R^1$ ,  $R^2$ ,  $R^3$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ , and  $R^8$   
54 may be absent;

55  $R^1$  is absent or H if  $W^1$  is N;

56  $R^2$  is absent or H if  $W^2$  is N;

57  $R^3$  is absent or H if  $W^3$  is N;

58  $R^4$  is absent or H if  $W^4$  is N;

59  $R^5$  is absent or H if  $X^1$  is N;

60  $R^6$  is absent or H if  $X^2$  is N;

61  $R^7$  is absent or H if  $X^3$  is N;

62  $R^8$  is absent or H if  $X^4$  is N;

63  $R^9$  is selected from the group consisting of H, -OH, substituted and  
64 unsubstituted alkoxy groups, substituted and unsubstituted aryloxy  
65 groups, -NH<sub>2</sub>, substituted and unsubstituted alkylamino groups,  
66 substituted and unsubstituted arylamino groups, substituted and  
67 unsubstituted dialkylamino groups, substituted and unsubstituted

68 diarylamino groups, substituted and unsubstituted (alkyl)(aryl)amino  
69 groups, substituted and unsubstituted alkyl groups, substituted and  
70 unsubstituted aryl groups, -C(=O)H, -C(=O)-alkyl groups, and  
71 -C(=O)-aryl groups;

72  $R^{10}$  is selected from the group consisting of substituted and  
73 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
74 substituted and unsubstituted heterocyclyl groups, substituted and  
75 unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl  
76 groups, -C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl  
77 groups, -C(=O)NH<sub>2</sub>, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl)  
78 groups, -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups,  
79 -C(=O)N(alkyl)(aryl) groups, -NH<sub>2</sub>, -NH(alkyl) groups, -NH(aryl)  
80 groups, -N(alkyl)<sub>2</sub> groups, -N(alkyl)(aryl) groups, -N(aryl)<sub>2</sub> groups,  
81 -C(=O)NH(heterocyclyl) groups, -C(=O)N(heterocyclyl)<sub>2</sub> groups,  
82 -C(=O)N(alkyl)(heterocyclyl) groups, and  
83 -C(=O)N(aryl)(heterocyclyl) groups;

84  $R^{11}$  and  $R^{19}$  may be the same or different and are independently  
85 selected from the group consisting of substituted and unsubstituted  
86 alkyl groups, and substituted and unsubstituted aryl groups;

87  $R^{12}$  is selected from the group consisting of H, substituted and  
88 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
89 and substituted and unsubstituted heterocyclyl groups;

90  $R^{13}$  is selected from the group consisting of H, substituted and  
91 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
92 substituted and unsubstituted heterocyclyl groups, -OH, alkoxy  
93 groups, aryloxy groups, -NH<sub>2</sub>, substituted and unsubstituted

94 heterocyclalkyl groups, substituted and unsubstituted aminoalkyl  
 95 groups, substituted and unsubstituted alkylaminoalkyl groups,  
 96 substituted and unsubstituted dialkylaminoalkyl groups, substituted  
 97 and unsubstituted arylaminoalkyl groups, substituted and  
 98 unsubstituted diarylaminoalkyl groups, substituted and unsubstituted  
 99 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted  
 100 alkylamino groups, substituted and unsubstituted arylamino groups,  
 101 substituted and unsubstituted dialkylamino groups, substituted and  
 102 unsubstituted diarylamino groups, substituted and unsubstituted  
 103 (alkyl)(aryl)amino groups, -C(=O)H, -C(=O)-alkyl groups,  
 104 -C(=O)-aryl groups, -C(=O)O-alkyl groups, -C(=O)O-aryl groups,  
 105 -C(=O)NH<sub>2</sub>, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,  
 106 -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups,  
 107 -C(=O)N(alkyl)(aryl) groups, -C(=O)-heterocyclalkyl groups,  
 108 -C(=O)-O-heterocyclalkyl groups, -C(=O)NH(heterocyclalkyl) groups,  
 109 -C(=O)-N(heterocyclalkyl)<sub>2</sub> groups, -C(=O)-N(alkyl)(heterocyclalkyl)  
 110 groups, -C(=O)-N(aryl)(heterocyclalkyl) groups, substituted and  
 111 unsubstituted heterocyclalkylaminoalkyl groups, substituted and  
 112 unsubstituted hydroxyalkyl groups, substituted and unsubstituted  
 113 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl  
 114 groups, and substituted and unsubstituted heterocyclalkyloxyalkyl  
 115 groups;

116 R<sup>14</sup> is selected from the group consisting of H, -OH, alkoxy groups,  
 117 aryloxy groups, -NH<sub>2</sub>, -NH(alkyl) groups, -NH(aryl) groups,  
 118 -N(alkyl)<sub>2</sub> groups, -N(aryl)<sub>2</sub> groups, -N(alkyl)(aryl) groups,  
 119 substituted and unsubstituted alkyl groups, substituted and  
 120 unsubstituted aryl groups, -NH(heterocyclalkyl) groups,  
 121 -N(heterocyclalkyl)<sub>2</sub> groups, -N(alkyl)(heterocyclalkyl) groups, and  
 122 -N(aryl)(heterocyclalkyl) groups;

123 R<sup>15</sup> is selected from the group consisting of substituted and  
124 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
125 substituted and unsubstituted heterocyclyl groups, substituted and  
126 unsubstituted heterocyclylalkyl groups, -C(=O)H, -C(=O)-alkyl  
127 groups, -C(=O)-aryl groups, -(C=O)-heterocyclyl groups,  
128 -C(=O)NH<sub>2</sub>, -C(=O)NH(alkyl) groups, -C(=O)NH(aryl) groups,  
129 -C(=O)N(alkyl)<sub>2</sub> groups, -C(=O)N(aryl)<sub>2</sub> groups,  
130 -C(=O)N(alkyl)(aryl) groups, -C(=O)NH-heterocyclyl groups,  
131 -C(=O)N-(heterocyclyl)<sub>2</sub> groups, -C(=O)N(alkyl)(heterocyclyl)  
132 groups, -C(=O)N(aryl)(heterocyclyl) groups, substituted and  
133 unsubstituted aminoalkyl groups, substituted and unsubstituted  
134 alkylaminoalkyl groups, substituted and unsubstituted  
135 dialkylaminoalkyl groups, substituted and unsubstituted  
136 arylaminoalkyl groups, substituted and unsubstituted  
137 diarylaminoalkyl groups, substituted and unsubstituted  
138 (alkyl)(aryl)aminoalkyl groups, substituted and unsubstituted  
139 heterocyclylaminoalkyl groups, substituted and unsubstituted  
140 diheterocyclylaminoalkyl groups, substituted and unsubstituted  
141 (heterocyclyl)(alkyl)aminoalkyl groups, substituted and unsubstituted  
142 (heterocyclyl)(aryl)aminoalkyl groups, substituted and unsubstituted  
143 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl  
144 groups, substituted and unsubstituted hydroxyalkyl groups, and  
145 substituted and unsubstituted heterocycloxyalkyl groups;

146 R<sup>16</sup> is selected from the group consisting of H, substituted and  
147 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,  
148 and substituted and unsubstituted heterocyclyl groups;

149 R<sup>17</sup> is selected from the group consisting of H, substituted and  
150 unsubstituted alkyl groups, substituted and unsubstituted aryl groups,

151 substituted and unsubstituted heterocyclyl groups,  $-C(=O)H$ ,  
152  $-C(=O)$ -alkyl groups,  $-C(=O)$ -aryl groups,  $-C(=O)NH_2$ ,  
153  $-C(=O)NH(alkyl)$  groups,  $-C(=O)NH(aryl)$  groups,  
154  $-C(=O)N(alkyl)_2$  groups,  $-C(=O)N(aryl)_2$  groups,  
155  $-C(=O)N(alkyl)(aryl)$  groups,  $-C(=O)O$ -alkyl groups,  
156  $-C(=O)O$ -aryl groups, substituted and unsubstituted aminoalkyl  
157 groups, substituted and unsubstituted alkylaminoalkyl groups,  
158 substituted and unsubstituted dialkylaminoalkyl groups, substituted  
159 and unsubstituted arylaminoalkyl groups, substituted and  
160 unsubstituted diarylaminoalkyl groups, substituted and unsubstituted  
161  $(aryl)(alkyl)$ aminoalkyl groups, substituted and unsubstituted  
162 heterocyclylalkyl groups,  $-C(=O)$ -heterocyclyl groups,  
163  $-C(=O)-O$ -heterocyclyl groups,  $-C(=O)NH(heterocyclyl)$  groups,  
164  $-C(=O)-N(heterocyclyl)_2$  groups,  $-C(=O)-N(alkyl)(heterocyclyl)$   
165 groups,  $-C(=O)-N(aryl)(heterocyclyl)$  groups, substituted and  
166 unsubstituted heterocyclylaminoalkyl groups, substituted and  
167 unsubstituted diheterocyclylaminoalkyl groups, substituted and  
168 unsubstituted  $(heterocyclyl)(alkyl)$ aminoalkyl groups, substituted and  
169 unsubstituted  $(heterocyclyl)(aryl)$ aminoalkyl groups, substituted and  
170 unsubstituted hydroxyalkyl groups, substituted and unsubstituted  
171 alkoxyalkyl groups, substituted and unsubstituted aryloxyalkyl  
172 groups, and substituted and unsubstituted heterocycliloxyalkyl  
173 groups; and

174  $R^{18}$ ,  $R^{20}$ , and  $R^{21}$  may be the same or different and are independently  
175 selected from the group consisting of  $H$ ,  $-NH_2$ ,  $-NH(alkyl)$  groups,  
176  $-NH(aryl)$  groups,  $-N(alkyl)_2$  groups,  $-N(aryl)_2$  groups,  
177  $-N(alkyl)(aryl)$  groups,  $-NH(heterocyclyl)$  groups,  
178  $-N(heterocyclyl)(alkyl)$  groups,  $-N(heterocyclyl)(aryl)$  groups,  
179  $-N(heterocyclyl)_2$  groups, substituted and unsubstituted alkyl groups,

180 substituted and unsubstituted aryl groups, -OH, substituted and  
181 unsubstituted alkoxy groups, substituted and unsubstituted  
182 heterocyclyl groups, substituted and unsubstituted aryloxy groups,  
183 heterocyclyloxy groups, -NHOH, -N(alkyl)OH groups, -N(aryl)OH  
184 groups, -N(alkyl)O-alkyl groups, -N(aryl)O-alkyl groups,  
185 -N(alkyl)O-aryl groups, and -N(aryl)O-aryl groups.

1 10. The compound according to claim 9, wherein one of W<sup>1</sup>, W<sup>2</sup>,  
2 W<sup>3</sup>, and W<sup>4</sup> is N.

1 11. The compound according to claim 9, wherein one of X<sup>1</sup>, X<sup>2</sup>,  
2 X<sup>3</sup>, and X<sup>4</sup> is N.

1 12. The compound according to claim 9, wherein Y is selected  
2 from the group consisting of H, -OH, -OR<sup>10</sup> groups, and -NR<sup>12</sup>R<sup>13</sup> groups.

1 13. The compound according to claim 9, wherein Y is a -NR<sup>12</sup>R<sup>13</sup>  
2 group.

1 14. The compound according to claim 9, wherein R<sup>5</sup> is H, X<sup>4</sup> is  
2 N, and R<sup>6</sup> and R<sup>7</sup> are selected from the group consisting of H and alkyl groups  
3 having from one to four carbon atoms.

1 15. The compound according to claim 9, wherein R<sup>6</sup> or R<sup>7</sup> is an  
2 -OR<sup>15</sup> group and R<sup>15</sup> is an alkyl, aryl, heterocyclyl, or heterocyclylalkyl group.

1 16. The compound according to claim 9, wherein R<sup>6</sup> or R<sup>7</sup> is a  
2 -OCH<sub>2</sub>(CH<sub>2</sub>)<sub>q</sub>(heterocyclyl) group and q is 0, 1, 2, 3, or 4.

1 17. The compound according to claim 9, wherein R<sup>18</sup> is selected  
2 from the group consisting of substituted and unsubstituted alkyl groups, substituted  
3 and unsubstituted aryl groups, -NH<sub>2</sub>, -NH(alkyl) groups, -N(alkyl)<sub>2</sub> groups,



1                    18.     A pharmaceutical formulation, comprising the compound  
2     according to claim 1 in combination with a pharmaceutically acceptable carrier.

1                    20.     A pharmaceutical formulation, comprising the compound  
2     according to claim 9 in combination with a pharmaceutically acceptable carrier.

21. A method of treating a patient in need of an inhibitor of vascular endothelial growth factor receptor tyrosine kinase, comprising administering an effective amount of the pharmaceutical formulation according to claim 20 to a patient in need thereof.